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Disciplinary lenses model: A new approach to collegiate-level general education

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This work aims to study and promote a motivational model, Collegiate-level General Education that enhances students' motivation to have self-fulfillment and inherent desire to acquire diverse knowledge. In this way, students would not see Collegiate-level General Education as an obstacle to their undergraduate education, but as a great and priceless opportunity for them to be generalist lifelong learners. The research method used is deductive qualitative analysis. A variety of written texts relevant to the research topic and question were analyzed in this work. Purposive sampling was used to select the research data. It is found that each discipline has its own specific literacy or skills. Intellection or intellectual exercise in each discipline can be considered as a disciplinary lens. Through lens one can look at the world from a particular angle and therefore can read and understand a specific aspect or dimension of the world. Collegiate-level General Education puts disciplinary lenses of a variety of disciplines together to improve, broaden and deepen individuals' understanding of the world.

Key words: Disciplinary lenses model, collegiate-level general education, intellectual exercise (intellection), disciplinary literacy, disciplinary intellectual exercise, disciplinary lens.

INTRODUCTION

Collegiate-level General Education helps learners to pay attention to their intellectual abilities; it improves their reading and understanding of the world; it shapes their personalities and attitudes as well as the inner forces. In this regard, Mayer (1995: 47) believes that a noble intellectual does not only explain and interpret the world but also allow his or her behavior to be guided by the world. When a person's understanding of the world becomes deeper, his or her understanding becomes more objective, and consequently causes his or her "self" to be strongly connected to the world. This is why a realist cannot refrain from reading and understanding the whole world and his or her relation to it. Thus, it seems that reading and understanding of the world should be

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considered as the central concept in the educational philosophy of the society. According to Woods and Barrow (2006: 16-17), low-living conditions shall be imposed on a man who has a rootless existence and is unaware of the reality of his relation to the world. On the necessity and importance of Collegiate-level General Education, Liedman (2010: 546-547) believes that, in high school, the student must learn different subjects such as English, History and Mathematics, and must master their principles enabling him to solve any theoretical problem. These multidimensional capabilities must be strengthened at the university so that a talented student can prepare himself for study, doing research in each discipline and finding his or her path in any specific domain of knowledge.

If members of society would be expected to have general or intellectual education in the social, political, scientific, economic, etc. fields, they should benefit from the foundational knowledge in those fields. According to Brezinca (1992: 259), man must be so intellectually trained that he can choose the most fundamental of the various sensible issues. This requires the breadth of thought, which can be achieved only through acquisition of the foundations of different branches of knowledge. When a man masters the essential and foundational knowledge, he will be released from the weakness of accepting everything with ease. Without knowing the generalities and foundations of each branch of knowledge at the collegiate-level, one will not have proper and correct understanding of that knowledge. According to Kneller (1990), without gaining mastery of scientific and collegiate topics and subjects, man would remain alone with no companion in the realm of reality; while by mastering and benefiting from them, one can prevail over realities and use them for various purposes.

Research question

The research question is thus: “What is the motivational model for Collegiate-level General Education?” An examination of this will help to re-orient students’ perception of Collegiate-level General Education. Rather than viewing it as an obstacle in their undergraduate education, students will see it as a great and priceless opportunity for them to become generalist lifelong learners.

METHODOLOGY

This research uses deductive qualitative analysis; deep analysis was done and the main concepts and themes of the data were analyzed. The research sample consisted of variety of written text relevant to the research topic and question. The data collected from them are considered as raw data for this research; they were condensed into themes or categories. Sampling in this research was conceptual or theoretical. In fact, theoretical sampling was indeed purposeful sampling as data segments of the texts were selected to ensure its relation to the research topic and question as well as the relevant concepts, which in this regard are the most informative data segments selected to inform the research question. Each data segment (text chunk of any size) had to fit into a single theme or issue relevant to the research topic and question.

The deductive approach was used to validate and extend the conceptual framework or the preliminary model. In fact, deductive approach starts with existing data and sources plus an expected pattern, framework, model, or theory that is tested and developed by the qualitative research strategy. Qualitative analysis of content is not a new method but in recent decades, it has been used as a qualitative research technique applied to various scopes and texts. In deductive qualitative analysis, the most informative and explanatory data segments of the texts, most relevant to the research topic and question based on the researcher’s preliminary model, were selected. Each segment as the unit of analysis contained only one specific single idea or theme. After assigning proper labels to them, what followed was to immerse oneself in the labeling data segments for induction inference. This is done by classifying them in respect to their relationship with a specific phenomenon. Consequently, patterns, themes or categories emerged. In this way, first the main categories were generated and then by continuing the process, most of the main categories were divided into subcategories. Through the feedback loops, the subcategories were evaluated again and consequently some of them were related to the main categories. As qualitative analysis continued, the categories were revised many times: some were decomposed, combined, deleted, and some new categories were generated. The next stage involved making sense of the identified categories as well as identifying the relationship between them and making inferences, patterns and new meanings. In this way, according to Zhang and Wildemuth, “the process of qualitative content analysis often begins during the early stages of data collection. This early involvement in the analysis phase will help you move back and forth between concept development and data collection, and may help direct your subsequent data collection toward sources that are more useful for addressing the research questions” (Zhang and Wildemuth, 2010).

COLLEGIATE-LEVEL GENERAL EDUCATION

Proper and effective education for human intellectual and rational growth is not the type of occupational, professional or specialized education, but a kind of general or intellectual education. This, according to Elias (2006: 29-30), is called Intellectual (Rational) or Cognitive Education, since it must increase the intellect or reason of individuals. It is also called general education, since it includes the most general domains of knowledge in which mastering them is expected from an individual.

Collegiate-level General Education is intrinsically and inherently general, multidisciplinary, broad, and diverse; it connects us to the whole of human knowledge and familiarizes us with its diversity and vast breadth; it does not emphasize a particular branch of knowledge. Collegiate-level General Education, which focuses on intellectual education and strengthening of intellectual capacities, capabilities and abilities of individuals, is the result of passing necessary and sufficient number of

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collegiate-level general or introductory courses in various branches of knowledge, regardless of the individuals' majors or specialized fields of study. This enables them to make independent thinking and judgment, as well as making the right choices in their individual and social life. It also makes them willing and eager to continue learning throughout their lives.

Collegiate-level General Education makes individuals closer to their own maximum intellectual capacity and potential through Introductory Courses. To achieve potential perfection, an individual must actualize his or her own intellectual capacities. Also by all-round collegiate-level education, an individual can become generalist or multidimensional human being, while through one branch of knowledge, obviously he or she can only read and understand one aspect of reality and not the whole of reality. Indeed "Thinking in one branch of knowledge leads to human growth and perfection in one dimension. Hence, intellectual cultivation can only be achieved through General and all-round Education and not Specialized Education" (Research Institute of Hawzeh and University, 2005: 358-359). On the other hand, reality is not divided into different branches of knowledge; therefore, one must master the foundations or introductory courses of different branches of knowledge in order to be familiar with different dimensions of human cognition since each dimension indicates only a part of world realities. That is why, according to Newman, the extreme emphasis on a single educational field or discipline distorts man's understanding of reality, because all branches of knowledge are considered as an integrated whole; each discipline is merely considered as a segment or an angle of view or a method of dividing knowledge (Haris 1991). In fact, Collegiate-level General Education is the unifying and integrating element of different fields of study, and in general, it is the unifying element which makes specialization and expertise sensible. Jaspers (2015: 73-74) also believes that research, exploration and knowledge are divided into domains, creating an inseparable and integral whole. Therefore if any single academic discipline would be considered apart from the whole knowledge, it shall lose its profound and deep meaning.

Collegiate-level General Education makes it possible for an individual to master the basics, foundations, generalities, and introduction of various branches of knowledge, and to enjoy a wide variety of background or prior knowledge. This consequently shall enable him/her to understand different and diverse information as well as links and connections between various fields of knowledge, in order to deal effectively with issues and problems arising from the complexities of life. On the necessity of having the widest and most diverse foundational and basic information, Chateau (2009: 127) correctly concludes that Comenius would regret that the future divine nobles, political men, judges, and physicians were unaware of metaphysics, physics and mathematics, which in his view, were the only subjects that could make their judgment and thought accurate. What he would hope for them was broad and open mindedness, as well as more and more general knowledge.

INTELLECTUAL EXERCISE (INTELLECTION)

Intellectual exercise or intellection is the process of using the intellect (Reason) and its components (concept making, meaning making, reasoning and thinking, critique, and building hypothesis and theories) to do a certain specific intellectual activity in a subject or topic. Intellectual exercise cannot be done in a vacuum, without a subject. In fact, as the eye needs light to see, intellect also needs subject to do certain intellectual exercise. Any subject, fact or idea is related to a branch of knowledge or a set of branches of knowledge, and any branch of knowledge has its own specific intellection or intellectual exercise. By doing intellection or intellectual exercise in a branch of knowledge, it will become more complete and causes cognition of the corresponding aspect of reality to be developed. According to Griese (2004: 116), intellect (reason) is the most important characteristic of man, which if it grows well, makes it possible to understand the world. Comparing intellectual exercises with bodily or physical exercises can create an effective context for a better understanding of the conception of intellectual exercises. As the human body which is unit, but has multiple capacities of bodily or physical exercises, the human intellect is also unit, and has multiple capacities of intellectual exercises. Also as each person can build his or her own body through physical or bodily exercises in various sports, he can also build his or her own intellect, through intellectual exercises in various branches of knowledge. In fact, as each kind of sport consists of specific physical or bodily exercises, also intellection in each branch of knowledge consists of specific intellectual exercises.

Reality or the external world is not fragmented, but it is indeed integrated and unified. That is why man has gradually created branches of knowledge in order to better understand reality or the external world and achieve a more complete, clear, and precise representation (product of perception of the sense-data), that is a kind of image of the world and reality. Therefore, the human knowledge is multiple; which if we would have intellectual exercises in more and more branches of knowledge, our understanding of the world and reality would become more complete, clear and precise. Each branch of knowledge has its own particular intellectual exercise because each branch of knowledge is unique, so that knowledge is made in it in a particular way. For example, each knowledge like philosophy, physics or psychology clearly has a specific method of intellection or

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intellectual exercise. In this regard, Savater (2005: 21) correctly concludes that Kant believed that since philosophizing is a method, that is, the way that thought travels along it; and indeed a way of looking at things, and performing arguments, hence only philosophizing or doing philosophy can be taught, and not the philosophy!. Furthermore, according to Savator (2005: 10), philosophy is a kind of exercise of the intellect or a kind of intellectual exercise. Even Savator (2005: 15) goes much further than that and says that 'I want to think that philosophical intellect can also exist'. Thus, the intellect is single (unit), but the intellectual exercise is multiple. Hence, for example, we can speak of philosophical, psychological, sociological, physical, educational, and political intellectual exercises and so on.

General education, especially at the collegiate-level, with respect to its multidisciplinary, broad and diverse nature, is the means of intellectual exercises for cultivation of intellect. That is why, according to Krishnan (2009), in general, the tendency of educators in favor of multidisciplinarity is very high, since it provides a greater scope and range of possibilities for the development of the learners' interests, abilities and strengths (Krishnan, 2009). In this regard, Locke believes that every human being has the power of intellection that can be developed and guided. What makes intellection weak is the lack of its use in the intellectual issues on a wide scale; that is, on various issues, including study of scholarly and philosophical books (Research Institute of Hawzeh and University, 2005: 207). Every human being should try to activate and fulfill his or her own potentials and capacities of multiple Intellectual exercises to make his or her own power of intellect maximized. According to Descartes (2006: 80), if it would be possible that from our birth we could have our complete and fully developed intellectual abilities, and would only follow the absolute leadership of our intellect, then our thoughts would be always firm and clean.

Disciplinary intellectual exercise (Disciplinary intellection)

The ability of a single body to do various sports is similar to the ability of a single intellect to do various disciplinary intellectual exercises. In other words, single intellect is similar to a single body, and different kinds of sports are similar to different kinds of intellections, as any discipline or branch of knowledge has its own particular intellectual exercise. That is, just as bodily exercises are different in different kinds of sports, intellectual exercises are also different in different disciplines or in different branches of knowledge. In fact, the methods or logic of reasoning, thinking, and critique, and in general, the method of intellectual exercise in different branches of knowledge are different. That is why we can talk about disciplinary intellectual exercise, and its skill which can be called disciplinary literacy. However, if a person has a healthy body, and has the ability to do bodily or physical exercises, it does not mean that prior to necessary and sufficient training and consequently prior to gaining adequate skills in a particular sport, he or she can do that particular sport correctly. Similarly, if a person has a healthy mind, and has the ability to do intellectual exercises, it does not mean that prior to necessary and sufficient intellectual exercises and consequently prior to obtaining adequate skills in a particular branch of knowledge, he or she can do intellectual exercise in that particular branch of knowledge correctly. In fact, in the last two decades, the invention of Disciplinary Literacy, which is indeed the skill of disciplinary intellectual exercise, by Cynthia Shanahan and Timothy Shanahan, implicitly approves the existence of disciplinary intellectual exercise and consequently multiple intellectual exercises.

Skills of disciplinary intellectual exercise (Disciplinary literacy)

In every branch of discipline, knowledge is created in a particular way, and therefore each branch of discipline has its own specific conceptual framework and possesses a unique potential of epistemological power. That is why each branch of knowledge has a unique and specific perspective, and a set of specific research and thinking habits. Therefore, each branch of knowledge has its own skills of intellectual exercise or disciplinary literacy. In general, disciplinary literacy which consists of reasoning and thinking skills in each discipline shows one how to read, write, ask questions, reason, speak, solve problem as well as how to use the knowledge of that discipline, as an expert.

Disciplinary literacy was devised by Cynthia Shanahan and Timothy Shanahan approximately two decades ago for high school students to benefit from it. This is because high school students were not able to achieve necessary maturity and mastery in the branches of knowledge due to the inherent weaknesses in high school courses. According to Robertson (2014), Shanahan and Shanahan did research in a large number of fields in order to find out what kind of skills and literacy are required in a specific discipline. In fact, these two researchers have done research - along with educators of teacher training- in mathematics, chemistry, and history. One of the main findings of their research is that there are different intellectual values in each field, and therefore the methods that are used in the learning and acquisition of knowledge in each branch of discipline are different.

It seems the efficiency of disciplinary literacy at collegiate-level is much higher than its efficiency in high school level, because the closer the learners get to the

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end of their high school education, the more benefit they can have from disciplinary literacy. In this regard, Zigouris (2012) believes that Snow and Moje correctly concludes that as learners progress in their education, teaching them should become more complex and discipline-based so that it can support the learners' understanding of the complex texts in each content area. Hence, the product of integrating the Collegiate-level General Education with disciplinary literacy, called General Collegiate-level Literacy, shall be the highest level of literacy that can develop one's intellect to the highest.

The most important skills of disciplinary literacy

Three most important skills of disciplinary literacy are explained below.

(1) The logic of each discipline (thinking and reasoning in each discipline as an expert): The greatest skill of disciplinary intellectual exercise or the largest component of disciplinary literacy in each discipline is the ability to think in that discipline as an expert in it. Therefore, the greatest skill of the intellectual exercise in each discipline is mastering the logic of that discipline and its particular form of thinking. In order to apply the particular thinking or logic of each discipline, it is obvious that one should master specific knowledge of that discipline, and be aware of how to reason and think in it. For example, a psychology student, through learning psychological reasoning and thinking, should be able to reason and think psychologically. In order to be able to think in a discipline, with its particular logic, it is always necessary to master the main or key ideas of that discipline - those concepts and thoughts that make psychology become psychology - which gives an integrated and unified meaning to it. Then, you must find the connection of other thoughts you confront in that discipline with those concepts and thoughts.

For the deep study and learning of each discipline, you have to learn how to think within the logic of that discipline; and also, for example in a discipline like psychology, you have to learn how to think in that discipline psychologically. Unfortunately, most learners are unaware of the logic of the discipline or the branch of knowledge they are studying, and for this reason, they are limited in understanding that discipline as a whole, in conducting independent thinking within that discipline, and applying it outside the context of the text and texture of its academic tasks (Critical thinking and teaching students how to study and learn). Hence it seems that it is a wrong attempt to create a general reading comprehension skill, since each branch of knowledge needs a specific reading comprehension skill.

(2) Critical thinking in each discipline: The prerequisite for critical thinking in any subject or discipline is the mastery of the basic and foundational knowledge of that discipline; and for this reason, Mc Burney (2001: 11) believes that "Critical thinking cannot be thought abstractly, but it is created through specific subjects related to different scientific disciplines". It seems that due to specific epistemology as well as particular logic and reasoning of each discipline, critical thinking in each discipline is different from critical thinking in others. In this regard Meyers (1995: 2) also believes that the methods of critical thinking in different disciplines are different; for example, the way physicians deal with an issue is different from the way historians or economists deal with it; therefore, critical thinking in various disciplines must be developed in different ways. Thus, since critical thinking in different disciplines or branches of knowledge is different, learners must master critical thinking and know how to criticize what they read. In this way, critical thinking in each field is somehow interwoven with the content and knowledge of that field, and is considered as one of the most important skills in intellectual exercise of that field. Therefore, having a superficial knowledge about the subjects contained in a text is not enough for the critique of that text. Furthermore, according to Blaxter et al. (2006: 148), to critique a text, one must understand the main concept of a text and also study it in such a way that it can be evaluated by the quality of information, along with the evidence presented.

(3) Reading texts of each discipline as an expert in that discipline: According to Shanahan and Shanahan (2008), disciplinary experts read the texts in their discipline, different from the beginners or novices as well as the experts in other disciplines. For example, study and research on reading physics texts by physicists revealed that they tended to pay particular attention to new information that they did not already know, and also to the information that violated their expectations. They separated reading to learn from critical reading, reserving the latter for work that was directly applicable to their own work. Also, historians were found to engage in sourcing (paying attention to the author), contextualization (connecting text to the circumstances of the time), and corroboration (making comparisons across texts); also unlike scientists, historians did not suspend their critical stance when they read information about what they know less. Thus, the learners in the field of history should be able to read historical texts as experts, or they must be able to read, understand, analyze and criticize historical texts as history experts. They should be able to describe and explain the historical concepts and ideas contained in those texts as well as think about historical events and issues. Thus, by taking these steps, the learner achieves deeper and more meaningful learning, and consequently master historical literacy. Then he shall be considered to be historically literate, one with deep understanding of

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events, with active engagement in historical texts (Wisconsin Department of Public Instruction 2016).

DISCIPLINARY LENSES

Intellection or intellectual exercises in each discipline can be considered as a lens; through each lens one can look at the world from a particular angle and can read and understand a specific aspect of the world. The main components of a lens are perception and intellection (Intellectual Exercise), and the inputs of a lens are sense-data which are perceived and converted to representations.

Representations are indeed appearance of reality made in the mind. For example, if a person stands in the middle of a railroad, and looks at the rails, he can only see the representation of the rails - which is built in his or her own mind - instead of the real rails. He mistakenly thinks that the rails, due to perception error, seem connected in the distance, while obviously in reality the rails never connect to each other. There is always a time-lag between our representations and reality (the external world) so that our observation or representation of reality always lags behind. For us reality is always the story of the past. For example, for us the sun is always the sun as it was 8 minutes ago, because the time the light from the sun reaches us is 8 min; therefore if the sun suddenly disappears, 8 min later we can realize its disappearance. Therefore, representation is not the reality itself but is only the appearance of reality made in the mind. By doing intellectual exercise on the representations, they are transformed to concepts and meanings or to cognition and finally knowledge.

Various lenses enable one to observe, read and study reality from a variety of angles. The reason that every discipline has its own specific lens or disciplinary perspective through which we view the world in a particular way, is that man has gradually designed each discipline in order to be able to study and understand objects and certain affairs or some phenomena, aspects of the external world. Each disciplinary lens can be considered as a unit of specific meaning making unit or a unit of specific intellectual exercise, and therefore, the more the number of disciplinary lenses, the more broad and extensive meaning of reality can be achieved. In this way, each disciplinary lens can be considered as a visual unit, in which it is obvious that with more visual units, one can achieve a clearer representation of reality.

Reality is integrated and unified, and is not fragmented or divided into separate and distinct parts or pieces; while human knowledge is multiple, divided and demarcated. Through each discipline or branch of knowledge we can only look at the world from only a particular perspective; in other words each discipline can provide merely a partial view of the world. Therefore, it seems that observing life only from one lens or one perspective would neither be meaningful nor useful. In this way, the human effort should always include observing, reading and understanding the world from many perspectives and in its entirety, until his or her intellect is improved. This is because, as Gombrowicz (2011: 56) states, we can understand the universe as far as it penetrates the human intellect, merges in it and attracts it to itself. We need more lenses to gain a more general, wider, broader and deeper understanding of reality. In fact as through knowledge of only one discipline, or through only one perspective or one lens, obviously the external world cannot be entirely viewed, observed, read, and understood, and for this it needs various different perspectives and lenses. The number and strength of the lenses we use in our observation of reality affects the quality and accuracy of our observation and understanding. Therefore, every individual observes and studies reality through a unique collection of different perspectives or lenses.

Using disciplinary lenses in Collegiate-level General Education

We can study the objects and affairs of the world, through a variety of different branches of knowledge; through a variety of different disciplinary lenses and perspectives, to achieve a greater understanding of more aspects of the world. With only one discipline which can provide only a particular perspective of the world, one can merely perform intellection or intellectual exercise through only one perspective.

Through disciplinary lenses, corresponding to the collegiate-level introductory courses, or through the Collegiate-level General Education, individuals can discover their potential capacities and talents. Also, through disciplinary lenses, individuals will also be able to discover their best professional, research or specialized interests. Through disciplinary lenses, a person tries to obtain a broad and diverse collegiate-level introductory, basic and foundational understanding of various subjects for improving his or her mind and to avoid being deprived of the familiarity with them in order to use every opportunity for intellectual improvement.

Collegiate-level General Education is not one-dimensional or one-sided, but it is all-round and generalist, covering a variety of subjects, issues, and affairs. Its purpose is to create a multidimensional human being, not a single dimensional one. In fact, the development of a multidimensional human being is achievable only through Collegiate-level General Education. Establishing a firm and strong foundation for human intellections or intellectual exercises in various dimensions of human cognition, and consequently providing familiarity with various fields of cognition cause

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growth and development of all aspects of human existence.

Through Collegiate-level General Education, the learner not only achieves the relationship between the fundamentals and generalities of various branches of knowledge, but also achieves synergetic insight through combination and interactions of different perspectives and lenses of knowledge. It is also possible that each of our disciplinary cognition may strengthen our other cognition. Furthermore, Collegiate-level General Education puts lenses of a variety of disciplines together, so that its multi-disciplinary structure makes the learners accustom themselves to search for diverse perspectives of the topics and issues.

Using disciplinary lenses emphasizes the role of collegiate-level introductory courses in creating and building a reliable knowledge base, which provides scholarly, academic and collegiate-level support for effective reading and deeper understanding of a variety of topics, contents (such as media contents), texts and analysis.

The allegory of the wall

In this allegory, the human mind is likened to a set of lenses installed in a wall in which reality and the external world are behind it. Imagine there is a wall full of lenses, in front of each person from birth to the end of his or her life, where reality is behind it. Through those lenses, only the representations (a kind of images that are made in the mind) and cognition of reality can be accessed. In fact, man creates the appearance of the external world in his own mind and therefore cannot observe the world itself. In this way, each person has a unique wall in front of him; and if he changes his or her place, the wall will still remain in front of him and therefore cannot be emancipated from it. Human beings are separated from reality by a wall full of lenses, which is always in front of them, and observe the world by the overall representation and cognition provided by the lenses. Instead of reality itself, humans have only access to representations and cognitions of reality throughout their life. The representations (sensory perceptions) and cognition that are indeed mental show only the appearance of reality and not the reality itself. According to Geisler (2014: 367, 50), we are limited to a kind of reality which is built both in and by our own mind; in other words knowledge is mentally created in the mind of people.

If people are told that what they access is not reality itself, but it is the representation and cognition of the appearance of reality made in their own minds which consequently are incomplete, unclear and not error-free, they will not accept. This is because from birth, they are accustomed to them. They hardly think that their cognition can be modified and become more complete and clear. Intellection or intellectual exercise in any discipline or branch of knowledge is a kind of mental practice or mental exercise that increases the epistemic power of the corresponding lens of that branch of knowledge. Therefore, it will be made possible to achieve a more complete and clear cognition of the reality corresponding to that branch of knowledge.

The allegory of the wall somehow depicts the consequence of the inadequacy or lack of Collegiate-level General Education that can lead to the captivity of man in the appearance of reality. It expresses the fact that, neither representation nor cognition is equal to reality, because only the appearance of reality is made in the mind of man. Consequently, the knowledge derived from thinking about the appearance of reality is obviously a subjective knowledge, which always has only a degree of correspondence to the reality and to the objective knowledge contained in it. That is why man's knowledge, for example on the structure of atom is incomplete, unfinished, uncertain, fallible and transitional and far from the objective knowledge contained in the atom itself. In this regard, according to Popper (2004: 56-57), science is a human work, and therefore it is not free of error; and according to Davarpanah (2014: 33), science is a process of constant modifications and developments so that one of the most important qualities of science is its transitional characteristics. In this way, man can become gradually closer and closer to the objective knowledge contained in reality through constant modifications of human knowledge, which is subjective; however, human subjective knowledge will never completely coincide with the objective knowledge. That is why according to Popper (2004: 59), we can wish to obtain scientific facts, but can never reach certainty; and also according to Wahl (1996: 93-94) we should not expect that by scientific consideration, we can definitely reach the truth; because science is in constant transition and each day it may be modified and improved. The allegory of the wall reveals the limitations of the human nature that human beings cannot see the external world itself, but instead can only access the representation and cognition of the external world created and built in their own minds.

The implicit message of this allegory is that humans will eventually find out that it is always possible for them to access more and more complete and clear cognition of reality; and it seems that when people would find out what they access - which are mental representation and cognition (that shows only the appearance of reality) - are an incomplete, flawed and vague image of reality, but not the reality itself. In order to achieve a more complete and clear cognition of reality, they will become willing and eager to do intellectual exercise or intellection in more and more various and diverse disciplines. Thus, the allegory of the wall is not a closed system, as it shows that it is possible for man to have access to more complete and clear cognition of reality and the external

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world.

Conclusıon

Intellect (reason) which is innate in man is single while intellection or intellectual exercise is multiple; and hence it can be improved through education specially through general education which is multidisciplinary. In other words, human knowledge is multiple, and methods of intellectual exercise in different branches of knowledge are different. Each branch of knowledge has a unique and specific perspective while reality is integrated and not fragmented. Therefore in order to understand reality, one must master the foundations or introductory courses of different branches of knowledge.

The Collegiate-level Disciplinary Lenses graduates pay sufficient attention to current branches of knowledge; they do not only understand the basic and key concepts, principles and conceptual ideas of the disciplines, but also acquire the disciplinary literacy or the skills of intellectual exercise in each discipline. This model creates an intrinsic motivation based on the individual self-fulfillment and inherent desire for acquisition of diverse knowledge in order to read and understand the world.

Disciplinary Lenses Model can help encourage and promote intrinsic motivation which comes from within the human being because human beings are inherently and intrinsically motivated to read and understand the world and consequently enjoy mastering different branches of knowledge. This model arouses the university students' curiosity about the foundations, introductions and generalities of different disciplines and branches of knowledge, which increases the motivation for acquisition of the Collegiate-level General Education to satisfy their cognitive and knowledge needs. In this way, this model is an efficient motivational model that improves the motivation of the university students for acquisition of Collegiate-level General Education. This model quenches the thirst of the soul and mind of man that is inherently very thirsty and eager for broad and diverse knowledge in order to be able to read and understand the world. This is because understanding of the world is inherently and obviously beneficial and useful for man essentially for his individual and social needs and also for using it in his or her occupation or profession.

Each discipline or branch of knowledge has its own specific intellectual exercise, and by doing intellectual exercise in a discipline, it will be developed and will become more clear and complete. In order to be able to do intellectual exercise or intellection in a discipline, for example in order to reason or think in a discipline with its particular logic, it is always necessary to master both its content knowledge or disciplinary knowledge especially its main or key ideas as well as its disciplinary literacy.

Collegiate-level General Education which consists of intellectual exercises in different disciplines for cultivation of the intellect, puts disciplinary lenses of a variety of disciplines together, to improve, broaden and deepen our own understanding of the world, as each disciplinary lens can be considered as a unit of specific meaning making. By increasing the number and strength of the disciplinary lenses that we use, the quality and accuracy of our observation, reading and understanding of the reality shall be developed. Collegiate-level General Education through Disciplinary Lenses Model: (1) provides introduction to a wide range of disciplines for acquisition of disciplinary knowledge plus disciplinary literacy (2) provides an arena for doing disciplinary intellectual exercises in order to understand reality or the world (3) cultivates single intellect through multiple intellectual exercises (4) puts greater emphasis on the development of the intellectual abilities of students (5) provides incentive and motivation for lifelong learning in different disciplines.

The Scholarly Discipline Model that according to Newton (2000) has been developed by its advocates including Bruner, Phenix, as well as professional disciplinary societies consists of ideas and concepts that support the Disciplinary Lenses Model and its conception. According to Newton (2000), the Scholarly Discipline Model as a model of general education firstly proposes that General Education should be basically an introduction to the disciplines that comprise and give shape to the college, and secondly the strongest general education comprises a series of rigorous introductory courses in the disciplines. This is due to the fact that the organization of the university into disciplines clearly mirrors the storehouses of human knowledge. Furthermore in this regard, according to Newton's findings, the Scholarly Discipline Model provides the following main aspects, assumptions, or pedagogical approaches that support the Disciplinary Lenses Model: (1) Key insight: Disciplines as accumulated wisdom and ways of understanding the world humankind have developed over the centuries; (2) Role of the university: Vigorous developer/extender of the knowledge and methods of the academic disciplines; (3) Substance of curriculum: key concepts and methods of inquiry as defined by the disciplines; (4) Ideal graduate: Beginner practitioner of the disciplines; (5) Breadth/depth: Sharp introductions to the range of basic disciplines; (6) Source of coherence: The individual student piecing together the mosaic of the disciplines; (7) Orientation: Instills an understanding of the intellectual treasures and scholarly methods that are society's intellectual heritage.

In this regard for example in Newton's description of the Scholarly Discipline Model (Newton, 2000), the source of coherence and integration is the individual student piecing together the mosaic of the disciplines, while in the Disciplinary Lenses Model the source of

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integration is reading and understanding the world; consequently it is the relevance of the disciplines to the world through combining or weaving together the perspectives, representations and cognitions of their disciplinary lenses into an integrated coherent whole lens through which the world can be viewed, read and understood more clearly and completely.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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